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EXAMINER

FINDLEY, CHRISTOPHER G

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/762,214	Applicant(s) MCKAY ET AL.	
	Examiner Christopher Findley	Art Unit 2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3/29/2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-56 is/are pending in the application.
- 4a) Of the above claim(s) 4-11, 25, 32-39, 45 and 53 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 12-24, 26-31, 40-44, 46-52, and 54-56 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>3/08/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 4-11, 25, 32-39, 45, and 53 have been cancelled via the applicant's amendment dated 3/29/2007.

Response to Amendment

2. Applicant's arguments filed on 3/29/2007 have been fully considered but they are not persuasive.
3. Claims 1-2, 12, 19-22, 29-30, 40, and 47-50 (amended) are rejected under 35 U.S.C. 103(a) as being unpatentable over Steven G. Goodridge, "Content-based software demultiplexing of surveillance video", Proc. SPIE Vol. 4232, p. 513-520, February/2001 (hereinafter, "Goodridge") in view of Ahmad (US 6259817 B1).
4. Claims 3, 13-16, 23-24, 26-28, 31, 41-44, 51-52, and 54-56 (amended) are rejected under 35 U.S.C. 103(a) as being unpatentable over Goodrich and Ahmad (US 6259817 B1) as applied to claims 1-2, 12, 19-22, 29-30, 40, and 47-50 above, and further in view of Smith et al. (US 5822542 A).
5. Claims 17-18 and 46 (amended) are rejected under 35 U.S.C. 103(a) as being unpatentable over Goodrich and Ahmad (US 6259817 B1) as applied to claims 1-2, 12, 19-22, 29-30, 40, and 47-50 above, and further in view of Guichard et al, "Software-based Universal De-multiplexing", Proceedings of SPIE, Vol. 4232, February/2001 (hereinafter, "Guichard").
6. The Applicant's present six collective arguments contending the Examiner's rejections as detailed above, said arguments addressing newly added limitations

Art Unit: 2621

purported to now distinguish over the applied art of record. However, after careful consideration of the arguments presented, the Examiner must respectfully disagree, and maintain the grounds of rejection versus the amended claims for the reasons that follow.

The applicant argues that the Goodrich article states that one possible approach to updating a camera view over time is to "replace the reference image each time a new image is classified as belonging to the same view," and that this "approach will fail irreversibly in the event of a single false-positive detection," in the amendment dated 3/29/2007 (page 8, line 17, through page 9, line 2). The Examiner respectfully notes that the Goodrich article subsequently teaches a solution to this problem by teaching the use of an IIR filter to change pixel values in order to prevent false-positive detection, thus preventing system failure.

The applicant also argues that the Goodrich article fails to teach a second discarding threshold (amendment dated 3/29/2007 page 9, lines 3-15). The Examiner agrees that the Goodrich article fails to teach this aspect. However, the Examiner respectfully notes that this limitation has previously been addressed by the Ahmad patent (US 6259817 B1) regarding claim 7 (cancelled by amendment) in the previous office action dated 12/19/2006.

The applicant further argues that the Ahmad patent teaches "discounting miniscule changes between images," which is in stark contrast to discarding an image if all of the mismatch values are above a discard threshold as required by the claims (applicant's amendment dated 3/29/2007, page 10, lines 3-10 and 16-23). However,

the Examiner respectfully disagrees. Ahmad discloses calculating a difference between two image frames, comparing the difference to a threshold, and discarding one of the images if the difference value does not meet a threshold condition (Ahmad: column 4, lines 25-31), as described by the claim language.

The applicant also argues that the term sub-sampling as used in claim 19 is distinct from selection of a portion of an image as selected by the office action (amendment dated 3/29/2007 page 11, lines 1-4). The applicant further states that sub-sampling an image implies that an algorithm is used to create a lower resolution version of the whole image and not merely the selection of a sub-region of the image. However, the Examiner respectfully notes that the language of claim 19 does not specifically point out the use of an algorithm for creating a lower resolution version of the whole image. Claim 19 simply states that "the first video image and the representative video image are sub-sampled prior to comparison." The Merriam-Webster Online Dictionary defines subsample as "to draw samples from (a previously selected group or population) : sample a sample of" (<http://mw1.merriam-webster.com/dictionary/subsample>), which describes the extraction of a portion of an image view, as disclosed by Goodrich (Goodrich: Section 5, Comparison Window Selection).

The applicant also argues that allowing a user to set the thresholds, including both the discard threshold and the mismatch threshold, is not taught or suggested by the prior art references (amendment dated 3/29/2007 page 11, lines 5-7). However, the Examiner respectfully disagrees. The Goodrich article states that "The user selects the difference metric threshold by adjusting a slider on the controls for the Demux filter"

(Goodrich: Section 7, Application integration). Also, Ahmad discloses that the user may control the threshold T, which is the discard threshold (Ahmad: column 4, lines 25-31; column 5, line 62, through column 6, line 1).

The applicant argues that the prior arts fail to teach the limitation of “querying a user to associate the new image as the representative image of a camera or to discard the new image if each of the mismatch value is below a discard threshold” (amendment dated 3/29/2007 page 9, lines 16-22). The Examiner acknowledges that the prior arts from the previous office action fail to teach this aspect. However, the Examiner also notes that this limitation has been added in the current amended claims, and thus is addressed by Smith et al. (US 5822542 A) in the detailed action below.

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. **Claims 29-31, 40-44, 46-52, and 54-56 are rejected under 35 U.S.C. 101**

because the claimed invention is directed to non-statutory subject matter.

Independent claims 29 and 41 recite “A computer program product on a tangible computer readable medium containing computer code thereon readable by a computer for demultiplexing video images in a time-division multiplexed video stream, the video images produced by a plurality of cameras, the computer code comprising...” and “A computer program product on a tangible computer readable medium having computer code thereon for demultiplexing a time-division multiplexed video an image stream

Art Unit: 2621

having a plurality of images, the computer code for use with a computer, the computer code comprising...," respectively, that fail to meet the statutory requirement set forth in the Interim Guidelines, Annex IV (a) and (b):

(a) Functional Descriptive Material: "Data Structures" Representing Descriptive Material Per Se or Computer Programs Representing Computer Listings Per Se

Data structures not claimed as embodied in computer-readable media are descriptive material per se and are not statutory because they are not capable of causing functional change in the computer.

Claims 29-31, 40-44, 46-52, and 54-56 should be rewritten to claim the computer readable medium containing the computer program, not the program itself which happens to be written on a computer readable medium.

Independent claims 29 and 41 should be rewritten in a form similar to the following example: "A computer readable medium stored thereon a computer readable program which executes the steps of..."

(b) Nonfunctional Descriptive Material

Nonfunctional descriptive material that does not constitute a statutory process, machine, manufacture or composition of matter and should be rejected under 35 U.S.C. § 101. Certain types of descriptive material, such as music, literature, art, photographs and mere arrangements or compilations of facts or data, without any functional interrelationship is not a process, machine, manufacture or composition of matter.

The computer program as claimed is not properly associated with the operation. It is possible that the computer program may be an unrelated sub-routine or a simple "commence" instruction, which then causes the computer to execute the operation that could be self-resident, and not encoded on the medium. The Examiner suggests that the computer program be more directly associated with the operation.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 1-2, 12, 19-22, 29-30, 40, and 47-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steven G. Goodridge, "Content-based software demultiplexing of surveillance video", Proc. SPIE Vol. 4232, p. 513-520, February/2001 (hereinafter, "Goodridge") in view of Ahmad (US 6259817 B1).**

Re claim 1, Goodrich discloses a method for demultiplexing video images in a time-division multiplexed video stream (Goodrich: Abstract section), the video images produced by a plurality of cameras (Goodrich: Abstract section), the method comprising: parsing a first video image from the time-division multiplexed video stream (Goodrich: section 2: Problem Formulation, which discusses "extracting" one camera view at a time from the multiplexed video sequence); determining mismatch values between the first

video image and representative images for each camera (Goodrich: sections 2-3, which discuss a measure of "similarity" of image view(s) between images from the multiplexed video sequence. The similarity is based on difference histograms representative of mismatch between two video images); if at least one mismatch value is below a mismatch threshold, assigning the first video images as the representative image for the camera having the lowest mismatch value (Goodrich: sections 2-4, which also discuss that if the "similarity" based on the difference metrics is below a preset threshold, chances are the images originated from the same camera i.e. from the same channel). Goodrich does not specifically disclose that if all of the mismatch values are above a discard threshold, automatically discarding the first video image. However, Ahmad discloses a method of compressing a plurality of video images for efficiently storing, displaying and searching the plurality of video images, which includes calculating a difference between two image frames, comparing the difference to a threshold, and discarding one of the images if the difference value does not meet a threshold condition (Ahmad: column 4, lines 25-31). Since both Goodrich and Ahmad relate to comparing images and calculating difference values for the purpose of grouping the images, one of ordinary skill in the art at the time of the invention would have found it obvious to combine their teachings in order to minimize storage requirements as well as to permit a more efficient method of displaying and searching video images (Ahmad: column 2: lines 13-16). The method of Goodrich, now implemented in conjunction with the method of Ahmad, has all of the features of claim 1.

Re claim 2, the method of Goodrich, now implemented in conjunction with the method of Ahmad, discloses that the representative images are stored in a memory storage location (Ahmad: Abstract section), as in the claim.

Re claim 12, the method of Goodrich, now implemented in conjunction with the method of Ahmad, discloses providing the number of cameras to the processor (Goodrich: Fig. 1, which illustrates respective channel views for respective cameras and each camera is numbered), as in the claim.

Re claim 19, which further recites, "wherein the first video image and the representative video image are sub-sampled prior to comparison". The combined method of Goodridge and Ahmad does not explicitly use the term subsampling per se. However, such technique is implied in Goodridge. For example, Goodridge suggests comparing only a "portion" of an image view (section 5: Comparison Window Selection). In order to compare a portion of an image view, subsampling would have been necessitated to extract said portion. For further analysis, see response to arguments above.

Re claim 20, which further recites "wherein if the video image stream contains header information, discarding the header information". This aspect is implied through the discussion of claim 1 above. That is, header information associated with an image destined to be discarded will too be discarded. Furthermore, in Goodridge, since demultiplexing is carried out through content-based image comparison as opposed to conventional image identification through header information, discarding header

information would be have been obvious and expected because there is no need for such information.

Re claim 21, which further recites "providing a user interface for setting the mismatch level; receiving user input of the mismatch level", the combined method of Goodridge and Ahmad further discloses this aspect (Goodrich: section 7: Application Integration, also fig. 6 which is an interface to enable adjusting difference metric threshold), as in the claim.

Re claim 22, which further recites "providing a user interface for setting the discard level; receiving user input of the discard level". With reference to the discussion of claims 1 and 20 above, the combined method of Goodridge and Ahmad further discloses this aspect (Ahmad: column 4, lines 25-31; column 5, line 62, through column 6, line 1), as in the claim.

Claim 29 recites the corresponding computer readable medium containing instructions stored thereon for executing the method of claim 1, and, therefore, has been analyzed and rejected with respect to claim 1 above.

Claim 30 has been analyzed and rejected with respect to claim 2 above.

Claim 40 has been analyzed and rejected with respect to claim 12 above.

Claim 47 has been analyzed and rejected with respect to claim 19 above.

Claim 48 has been analyzed and rejected with respect to claim 20 above.

Claim 49 has been analyzed and rejected with respect to claim 21 above.

Claim 50 has been analyzed and rejected with respect to claim 22 above.

9. Claims 3, 13-16, 23-24, 26-28, 31, 41-44, 51-52, and 54-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goodrich and Ahmad (US 6259817 B1) as applied to claims 1-2, 12, 19-22, 29-30, 40, and 47-50 above, and further in view of Smith et al. (US 5822542 A).

Re claim 3, the method of Goodrich, now implemented in conjunction with the method of Ahmad, discloses a majority of the features of claim 3 as discussed above concerning claim 1, but does not specifically disclose that if all of the mismatch values are above the mismatch threshold and at least one is below the discard threshold, providing a query for user input allowing the user to either assign the first video image as a representative video image for a camera or discard the first video image. However, Smith discloses an intelligent video information management system, which allows the user to select video data to be discarded before storing the video onto a disk (Smith: column 90, line 54, through column 91, line 11). Since Goodrich, Ahmad, and Smith all relate to comparing images and calculating difference values for the purpose of grouping the images, one of ordinary skill in the art at the time of the invention would have found it obvious to combine their teachings in order to achieve more efficient utilization of the disk space (Smith: column 90, line 67, through column 91, line 1). The combined method of Goodrich and Ahmad, now implemented in the system of Smith, has all of the features of claim 3.

Re claim 13, the combined method of Goodrich and Ahmad, now implemented in the system of Smith, discloses a method for demultiplexing an a time-division multiplexed image stream having a plurality of images, the method comprising:

comparing each new image within the image stream to a representative image associated with a camera to determine a mismatch value (Goodrich: section 3, Difference Metrics); if each of the mismatch values are above a mismatch threshold (Goodrich: section 3, Difference Metrics) and at least one mismatch value is below a discard threshold (Ahmad: column 4, lines 25-31), querying a user to associate the new image as the representative image of a camera or to discard the new image (Smith: column 90, line 54, through column 91, line 11), as in the claim.

Re claim 14, the combined method of Goodrich and Ahmad, now implemented in the system of Smith, discloses that if any of the mismatch values are below the mismatch threshold, selecting the lowest mismatch value and associating the new video image as the representative image for the camera associated with the lowest mismatch value (Goodrich: sections 2-4, which also discuss that if the "similarity" based on the difference metrics is below a preset threshold, chances are the images originated from the same camera i.e. from the same channel), as in the claim.

Reclaim 15, the combined method of Goodrich and Ahmad, now implemented in the system of Smith, discloses that if the mismatch values are all above a discard level, discarding the new video image (Ahmad: column 4, lines 25-31), as in the claim.

Reclaim 16, the combined method of Goodrich and Ahmad, now implemented in the system of Smith, discloses that after a predetermined number of video images are assigned to a particular camera, the total number of cameras can be determined (Goodrich: section 2, a measure of similarity is ascertained in order to classify images belonging to a view V_i or to a different view. Hence, this classification

can determine the total number of cameras based on a camera view V_i , being a member of the set $\in \{V_1, V_2, \dots, V_N\}$, where N is unknown.), as in the claim.

Re claim 23, which further recites "allowing a user to assign a video image as the representative image for a camera even though the mismatch is above the discard error level". With reference to the discussion of claims 1 and 20 above, the combined method of Goodridge and Ahmad, implemented in the system of Smith, as a whole would have obviated the motivation for a user to use the interface not only to set various thresholds, including discard threshold(s), but to also subjectively assign camera to his choosing. Such capability is implied and necessitated through the user interface (Goodridge: Fig. 6), as in the claim.

Re claim 24, arguments analogous to those presented for claim 23 are applicable to claim 24, and, therefore, claim 24 has been analyzed and rejected with respect to claim 23 above.

Re claim 26, which further recites that, "a user may clear all reference images and restart the process of assigning a video image as the representative video image for each camera." Although the combined method of Goodridge and Ahmad, implemented in the system of Smith, is silent on this aspect, such capability is implied and necessitated through the user interface (Goodridge: Fig. 6; sections 6-7). In Goodridge, the user interface would have obviated the motivation to subjectively clear all reference images and to begin camera assignment to each camera images, especially for CCTV video surveillance application.

Re claim 27, which further recites “automatically adjusting brightness within the reference video images and the new video image so that brightness levels are substantially similar prior to comparison. Although the combined method of Goodridge and Ahmad, implemented in the system of Smith, is silent on this aspect, such capability is implied and necessitated through the user interface (Goodridge, fig. 6, sections 6-7, e.g., “video renderer”).

Re claim 28, which further recites “selecting a portion of the reference images to be used for comparison to a same portion of the new video image”. The combined method of Goodridge and Ahmad, implemented in the system of Smith, discloses this aspect (section 5: Comparison Window Selection), as in the claim.

Claim 31 has been analyzed and rejected with respect to claim 3 above.

Claim 41 recites the corresponding computer readable medium containing instructions stored thereon for executing the method of claim 13, and, therefore, has been analyzed and rejected with respect to claim 13 above.

Claim 42 has been analyzed and rejected with respect to claim 14 above.

Claim 43 has been analyzed and rejected with respect to claim 15 above.

Claim 44 has been analyzed and rejected with respect to claim 16 above.

Claim 51 has been analyzed and rejected with respect to claim 23 above.

Claim 52 has been analyzed and rejected with respect to claim 24 above.

Claim 54 has been analyzed and rejected with respect to claim 26 above.

Claim 55 has been analyzed and rejected with respect to claim 27 above.

Claim 56 has been analyzed and rejected with respect to claim 28 above.

10. Claims 17-18 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goodrich and Ahmad (US 6259817 B1) as applied to claims 1-2, 12, 19-22, 29-30, 40, and 47-50 above, and further in view of Guichard et al, "Software-based Universal De-multiplexing", Proceedings of SPIE, Vol. 4232, February/2001 (hereinafter, "Guichard").

Re claim 17, the method of Goodrich, now implemented in conjunction with the method of Ahmad, discloses a majority of the features of claim 3 as discussed above concerning claim 1, but does not specifically disclose that channel assignment is performed in real-time. However, Guichard discloses an algorithm for a real-time de-multiplexing system in order to de-multiplex a live feed of multiplexed video (Guichard: section 4, Conclusion). Since Goodrich, Ahmad, and Guichard all relate to demultiplexing video streams and grouping video by like content, one of ordinary skill in the art at the time of the invention would have found it obvious to combine their teachings in order to incorporate real-time demultiplexing in order to de-multiplex a live feed of multiplexed video, especially for law enforcement purposes (Guichard: section 4). The combined method of Goodrich, Ahmad, and Guichard has all of the features of claim 17.

Re claim 18, the arguments presented for claim 17 are applicable to claim 18, and, therefore, claim 18 has been analyzed and rejected with respect to claim 17 above.

Claim 46 has been analyzed and rejected with respect to claim 18 above.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Findley whose telephone number is (571) 270-1199. The examiner can normally be reached on Monday-Friday 7:30am-5pm, Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on (571) 272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2621

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/Christopher Findley/

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